REMARKS

Claims 1 and 13 have been amended to further clarify Applicants' invention, based on, e.g., the Examples and the disclosure at pages 7-8 in the present application.

Entry of the above amendment is respectfully requested.

Anticipation Rejection over Goto

On page 3 of the Office Action, in item 5, claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,555,626 (Goto).

The Examiner's Position

With respect to the arguments presented in the Amendment filed January 29, 2004, the Examiner indicates in item 6 on page 4 of the Office Action that they have been fully considered but are not persuasive.

In particular, with respect to the argument that Goto claims a copolymer and not a mixture of two types of polymer electrolytes as recited in claims 1 and 13, the Examiner asserts that the present claims do not preclude that the composite electrolyte is a copolymer of the two polymer electrolytes. Additionally, the Examiner asserts that a copolymer is inherently a repeating mixture of the two polymer materials as recited in the claims of Goto. For example, the Examiner asserts that a copolymer A/B is a mixture of polymer units A and B. In addition, the Examiner indicates that it would appear that the monomer units of the instant claims are subsequently polymerized (see page 61 of the specification).

Applicants' Response

In response to this rejection, Applicants submit that a mixture of two types of polymer electrolytes as recited in the present claims does not include within its scope a copolymer of the two polymer electrolytes [although an individual one of the polymer electrolytes may itself be a copolymer, as can be seen from, for example, claim 3, in which the first polymer electrolyte comprises a sulfonated polyarylene polymer which comprises (1) an aromatic compound unit with an electron-attractive group in its principal chain and (2) an aromatic compound unit without an electron-attractive group in its principal chain].

In this regard, Applicants note that a mixture is a composition in which substances are mixed, but not chemically combined (see the attached definition from Grant & Hackh's Chemical Dictionary, 5th edition). In a copolymer A/B, units A and B are chemically combined (they are bonded to each other), so copolymer A/B should not be considered a mixture of units A and B, contrary to the Examiner's assertion.

With respect to the Examiner's reference to page 61 in the specification, Applicants note that this page refers to copolymerizing monomers A and B, but as can be seen from the disclosure beginning at the top of page 44, monomers A and B are copolymerized to synthesize the sulfonated polyarylene polymer which forms the first polymer electrolyte. Thus, this disclosure concerns subject matter like that recited in claim 3 as discussed above. That is, the disclosure of monomers A and B only concerns the synthesis of one polymer electrolyte (which itself is a copolymer in this situation), not a copolymer of the first polymer electrolyte and the second polymer electrolyte, contrary to the Examiner's assertion.

Accordingly, Applicants submit that the present invention is not anticipated by (or obvious over) Goto, and withdrawal of this rejection is respectfully requested.

Anticipation Rejection over US '513

On page 5 of the Office Action, in item 7, claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2002/0164513 (US '513).

The Examiner's Position

With respect to the arguments presented in the Amendment filed January 29, 2004, the Examiner indicates indicates in item 9 on page 6 of the Office Action that they have been fully considered but are not persuasive.

In particular, with respect to the argument that US '513 claims a copolymer and not a mixture of two types of polymer electrolytes as recited in claims 1 and 13, the Examiner again asserts that the present claims do not preclude that the composite electrolyte is a copolymer of the two polymer electrolytes. Additionally, the Examiner asserts that a copolymer is inherently a repeating mixture of the two polymer materials as recited in claim 12 of US '513. In addition, the Examiner again indicates that it would appear that the monomer units of the instant claims are subsequently polymerized, based on page 61 of the present specification.

Applicants' Response

In response to this rejection, Applicants refer the Examiner initially to the remarks set forth above, particularly with respect to the distinction between a mixture and a copolymer and with respect to the analysis of the disclosure at page 61 in the present application. Those

remarks traverse the Examiner's comments with respect to the previous arguments against this rejection.

Moreover, Applicants note that the amended claims more clearly distinguish over the cited art, since the cited art does not require that a first polymer electrolyte and a second polymer electrolyte have different skeleton structures from each other. Indeed, Examples 5 and 6 of US '513 use two polymers which are the same type of polymer (i.e., sulfonated PEEK).

With respect to claim 3 in particular, Applicants note that the ranges in, e.g., claim 12 of US '513 are not relevant to the claimed invention, because they relate to a copolymer embodiment like that disclosed in the Goto patent, not a mixture of two types of polymer electrolytes as in present claims 1 and 13.

Accordingly, Applicants submit that the present invention is not anticipated by (or obvious over) US '513, and withdrawal of this rejection is respectfully requested.

Anticipation Rejection under 35 U.S.C. 102(f)

On page 5 of the Office Action, in item 8, claims 1-13 are rejected under 35 U.S.C. 102(f) because the applicant does not appear to have invented the claimed subject matter.

The Examiner's Position

The Examiner refers to items 5 and 6 in the Office Action, which concern Goto.

Applicants' Response

In response to this rejection, Applicants submit that claims 1-13 should not be rejected under 35 U.S.C. 102(f) for the same reasons as those set forth above with respect to the

corresponding rejection under 35 U.S.C. 102(e), and thus withdrawal of this rejection is respectfully requested.

Obviousness-Type Double Patenting Rejection

On page 7 of the Office Action, in item 11, claims 1-13 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 6,555,626 (Goto). Further, on page 7 of the Office Action, in item 12, claims 1-13 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 12-26 of U.S. Patent Application Publication No. 2002/0164513 (US '513).

In response to this rejections, Applicants submit initially that the present claims should not be rejected under the judicially claimed doctrine of obviousness-type double patenting over claims 1-10 of Goto and claims 12-26 of US '513 for the same reasons as those set forth above with respect to the corresponding rejections under 35 U.S.C. 102(e). In this regard, Applicants note that since the present claims are not obvious over the entire disclosure of Goto and US '513, they cannot be obvious over only the claims of those references.

Further, with respect to the claims of US '513 in particular, Applicants note that claims 13-26 are actually non-elected claims in that application. In the event that those claims are ultimately prosecuted on the merits, the applicants in the copending application now plan to amend claim 13 of that application to recite that the two sulfonated polymers have the same

skeleton structure but different ion exchange capacity, which is clearly different from the claims as amended in the present application.

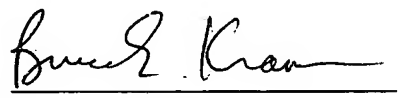
Thus, Applicants submit that the double patenting rejections have been overcome, and withdrawal of the rejections is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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GRANT & HACKH'S

CHEMICAL DICTIONARY

[*American, International, European and British Usage*]

Containing the Words Generally Used in Chemistry, and Many of the Terms Used in the Related Sciences of Physics, Medicine, Engineering, Biology, Pharmacy, Astrophysics, Agriculture, Mineralogy, etc.

Based on Recent Scientific Literature

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The previous edition of this book was *Hackh's Chemical Dictionary*, 4th ed., published by McGraw-Hill in 1969. It was prepared by Dr. Julius Grant from a *Chemical Dictionary* compiled by Ingo W. D. Hackh. The current, or 5th, edition of this book was prepared by Dr. Roger L. Grant, whose father prepared the 4th edition.

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mipor Microporous. **m. rubber** A soft rubber, with pores of about 0.0004 mm average diameter. **m. scheider** A diaphragm of m. rubber used in accumulators.

mirabilite $Na_2SO_4 \cdot H_2O$. A native sulfate.

miramint A tungsten-molybdenum alloy, used in cutting tools.

mirbane oil Nitrobenzene*.

Mirlon Trademark for a synthetic polyamide fiber.

mirror A highly polished surface that reflects light; made of polished metal or glass. **concave ~** A)-shaped mirror. **convex ~** A (-shaped mirror. **plane ~** A flat mirror.

mirrorstone (1) Mica. (2) Muscovite.

MIS Management information system.

misce Latin for "mix."

mischmetal (1) A mixture of rare-earth metals. (2) Commercial cerium (40–75% Ce) with La, Nd, Pr, etc., and sometimes 1–5% Fe; used for pyrophoric alloys. Cf. *Auer metal.*

mischzinn (German: "mixed tin") The alloy Sn 54.4, Pb 41.9, Sb 3.6%; used to prepare solders.

miscibility The ability of certain liquids to mix in all proportions. **m. gap** The temperature range in which certain normally miscible liquids will not mix.

miscible Capable of mixing or dissolving in all proportions. **im ~** Not able to mix.

miso An edible fermented soybean paste. Cf. *kogi.*

mispickel $FeS_2 \cdot FeAs_2$. A native iron ore.

Mississippian See *geologic eras,* Table 38.

mist (1) Fog. Cf. *colloidal systems.* (2) Pharmaceutical abbreviation for mixture.

mistletoe The leaves and young twigs of *Phoradendron flavescens;* an antispasmodic and narcotic. Cf. *viscum.*

mistura Mist. Latin for "mixture"; used in pharmacy.

Mitchell, Peter Dennis (1920–) British chemist. Nobel prize winner (1978), noted for work on chemiosmotic reactions.

mitochondrion A double-membrane structure in the living cell, which plays a role in the chemical changes involved in respiration.

mitosis Division of somatic cells, as part of cell regeneration and growth. The number of chromosomes remains the same. See *diploid, karyokinesis.* Cf. *meiosis.*

mitragynine $C_{23}H_{30}O_4N_2$ = 398.5. Mitragyne. An alkaloid, m.106, from *Mitragyna speciosa* (Rubiaceae).

Mitscherlich **M., Eilhardt (1794–1863)** German chemist. **M. desiccator** A desiccator, with side tubes for evacuation. **M. eudiometer** A closed glass buret, with platinum electrodes at one end and a glass stopcock at the other. **M. law** (1) The law of *isomorphism,* q.v., which is not rigidly correct: The same number of atoms of similar elements combined in the same way produce an identical crystalline structure. (2) The spectra of isomorphous substances are similar.

mitsubaene $C_{15}H_{24}$ = 204.4. A sesquiterpene for *Cryptotaenia japonica,* mitsuba-zeri (Umbelliferae), Japan.

mix (1) To intermingle. (2) A physical mixture of substances, applied to rubber, etc.

mixed **m. crystal** A crystal of 2 isomorphous substances, which crystallize in the same system. **m. ester** An ester R−COO−R′, in which the 2 radicals, R and R′, are different. **m. ether** An R−O−R′ ether, in which the radicals, R and R′, are different. **m. infection** The invasion by and growth of 2 or more microorganisms in the animal body. **m. ketones** A ketone of the type R−CO−R′. **m. salt** A salt derived from a polyvalent acid, in which the H atoms are replaced by different metals, as $KNaNH_4PO_4$.

mixer Equipment for incorporating one or more materials into another; a steel bowl, with revolving mixing arms moving in opposite directions. Cf. *mill.* **static ~** A tubular m. with helical elements giving alternating left- and right-hand twists; designed to mix by a fluid's motion.

mixite $Cu_2O \cdot As_2O_3 \cdot nH_2O$ with 13% Bi_2O_3. An emerald mineral.

mixture (1) Substances that are mixed, but not chemically combined. **constant boiling ~** A m. of 2 liquids which, at a given pressure, distills unchanged, the boiling point remaining constant. Cf. *azeotropy.* **electrostatic ~** A m. obtained by using electric energy to accelerate conducting particles or ions in a nonconducting medium, and so to impart rapid and violent motion to the dispersed particles. Used to desulfurize fuel oils. **freezing ~** A m. of salts with water or ice which produces low temperatures. **law of ~** Law of *alligation.*

mixture (2) Mistura. A pharmaceutical preparation.

mks system Meter-kilogram-second system. A technical system of measurements recommended by the International Electrotechnical Commission (1938) as simpler than the cgs system. Subsequently rationalized and expanded to become the internationally used SI system.

mL*, ml* Abbreviation for milliliter.

mm Abbreviation for millimeter = 1/1,000 m. **mm^2** Abbreviation for square millimeter. **mm^3** Abbreviation for cubic millimeter.

mμ Former symbol for millimicron, 10^{-9} m; superseded (SI system) by nm.

μμ Former symbol for micromicron, 10^{-12} m; superseded (SI system) by pm.

mmf Abbreviation for magnetomotive force.

mmm Former symbol for millimicron; superseded (SI system) by nm.

Mn Symbol for manganese.

Mo Symbol for molybdenum.

m.o., MO Abbreviation for molecular *orbital.*

mobile Changing position; moving.

mobility (1) The motion of atoms, molecules, ions, or colloidal particles. The mobility, α, of an ion in a liquid; $\alpha = 1.037 \times 10^{-5} \lambda t$, where λ is the equivalent conductivity, and t the transport number of the ion. (2) The visible motion of colloidal particles and microorganisms. Cf. *Brownian motion.*

mobilometer A viscometer in which the time is noted for a disk to fall through a column of the liquid under investigation; used for oils and liquid foods.

mocha See *coffee.* **m.stone** Moss agate.

mochyl alcohol $C_{26}H_{46}O$ = 374.6. An alcohol, m.234, from mochi (Japanese birdlime).

mock **m. gold** Pyrites. **m. lead** Sphalerite. **m. ore** Sphalerite. **m. silver** Britannia metal. **m. vermilion** Lead chromate.

mock-up A nonworking model of an apparatus or plant intended to show the layout and method of operation.

mode (1) The actual composition of a substance, e.g., rock, as compared with its norm, q.v. (2) Term. One of three basic control methods used by conventional instrumentation: *proportional control* (corrective action is proportional to the difference between desired and actual values, that is, the error); *reset action* (correction is proportional to both the magnitude and duration of the error); and *derivative action* (correction is proportional to the rate of change of the error). (3) In statistics, the value of highest frequency, corresponding to the peak value of a normal distribution curve.

Modecate Trademark for fluphenazine hydrochloride.

modeccin A toxin from the passion flower plant.

model (1) A geometrical arrangement by which an idea or